

# Commentary

## Disposable Needles Should Be the Only Instrument Used to Test Sensation in Neurologic Examinations

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Percutaneous exposure can occur from pins and needles that are used to test for pain sensation during a neurologic examination when excessive force is applied or in patients with thin skin.<sup>1</sup> Added force is often used in comatose or symptomatic patients in an attempt to elicit a response, and elderly patients frequently have paper-thin skin. These patients may be at risk for the transmission of blood-borne pathogens from neurologic instruments containing nonsterile reusable needles.

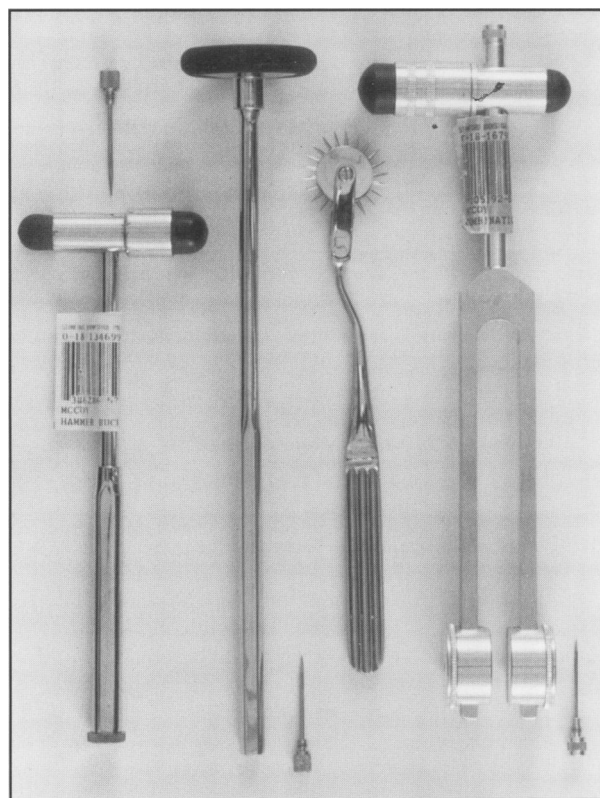
Various sharp neurologic devices are available, including the pinwheel and neurologic hammers with built-in pins and needles (Figure 1). These and other similar equipment are sold in all seven California university medical schools and medical equipment stores surveyed by us, without accompanying warnings. The use of these and other similar instruments are explained and discussed in several medical textbooks (Figure 2).<sup>1,2</sup> Although sterilization between examinations is recommended, no details are provided with the instruments or in the medical literature, and no warnings are given of the possible transmission of blood-borne pathogens.

The iatrogenic transmission of hepatitis B and C viruses (HBV and HCV) and the human immunodeficiency virus (HIV) is possible from contaminated needles through percutaneous exposure.<sup>3</sup> The rate of blood exposure through breaks in the skin during neurologic testing is not known. Although the risk to patients from neurologic instruments is not yet defined, the occupational risk of health care workers for percutaneous blood exposure from needle injuries represents an important health concern.

A special risk may be associated with the use of pinwheel devices that may have many as 20 pins placed in a circular pattern. As the pinwheel is rolled over the skin, each pin has its own associated risk of percutaneous exposure. The cumulative risk of exposure of this type of neurologic testing could represent a vector for the transmission of HIV even at a low single-needle-exposure transmission rate.

Blood-borne pathogens are becoming increasingly

prevalent and are associated with serious chronic morbidity and mortality. The inability to identify a substantial percentage of patients infected with HBV, HCV, and HIV mandates universal precautions in all patients until proved otherwise. This precaution would preclude the use of any nonsterile reusable device that comes into contact with blood or other infectious material. Universal precautions become extremely important to prevent HCV and HIV infections because no passive or active immunization products are yet available for these viruses.<sup>4</sup>

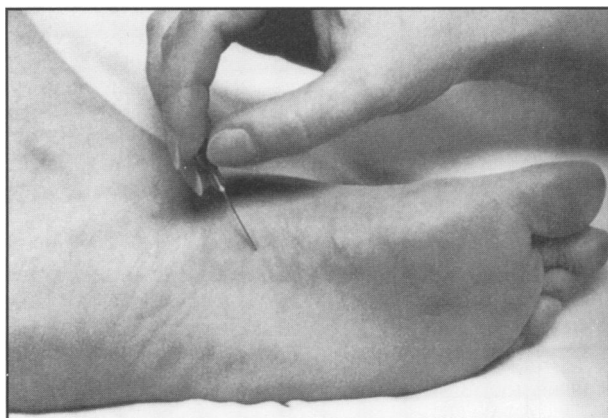


**Figure 1**—Reflex hammers with intrinsic needles are displayed along with a neurologic pinwheel device.

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**Figure 2**—The use of reusable needles for the purpose of neurologic testing is demonstrated in medical text.

Microorganisms vary widely in their resistance to disinfectants. Intermediate-level disinfection kills most microorganisms, including *Mycobacterium tuberculosis*, fungi, and most viruses.<sup>5</sup> Intermediate- and high-level disinfectants have been shown to be effective against HBV and HIV.<sup>6</sup> These moderately potent disinfectants include 2% glutaraldehyde, 500 parts per million of free chlorine from sodium hypochlorite solution (an iodophor disinfectant), and 70% isopropyl or ethyl alcohol solution.<sup>6</sup> Liquid chemical sterilization is less reliable than conventional heat sterilization, and when mistakes are made there is a higher chance of failure.<sup>5</sup> Nevertheless, these disinfectants would appear to be effective for the cleaning of reusable neurologic needles.

It is thought that blood-borne pathogens are much less likely to be transmitted by solid needles than by hollow-bore needles. Solid suture needles deliver 50% less blood inoculum at similar depths of penetration than do hollow-bore needles.<sup>7</sup>

## Conclusion

The percutaneous transmission of HBV, HCV, and HIV in hospital settings has been documented. Needles that can penetrate the skin for neurologic testing are being used on patients infected with blood-borne pathogens by physicians, medical students, and physician assistants and reused on other patients. Students may also use them on each other and family members for practice. Defining the risk of iatrogenic HBV, HCV, and HIV transmission in any possible setting is an important concern in this era of the acquired immunodeficiency syndrome and viral hepatitis. The risk of inadvertent percutaneous blood exposure through breaks in the skin from neurologic instruments should be eliminated. All health professionals should use only disposable needles to test sensation.

## REFERENCES

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